

REMARKS

This request for reconsideration is filed in response to the final Office Action dated June 2, 2009. For the following reasons this application should be allowed and the case passed to issue.

Claims 15-25 are pending in this application. Claims 15-25 have been rejected. Claims 1-14 were previously canceled.

Claim Rejections Under 35 U.S.C. § 103

Claims 15-23 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugita et al. (US 6,455,179) in view of Tanaka et al. (U.S. Pat. No. 6,803,142) and Rock (US 7,045,245). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 15, is a fuel cell assembly mounted in a vehicle comprising a fuel cell stack comprising plural fuel cells stacked in a fixed direction and a pair of end plates which are stacked on both ends of the plural fuel cells. A stacking bolt penetrates the pair of end plates in the fixed direction and maintains the plural fuel cells in a stacked state. A case houses the fuel cell stack, and a bolt penetrates an end plate and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case.

Another aspect of the invention, per claim 18, is a fuel cell assembly mounted in a vehicle comprising a fuel cell stack comprising plural fuel cells stacked in a fixed direction. A stacking bolt is disposed along the fixed direction to maintain the plural fuel cells in a stacked state. A fluid supply/discharge block is fitted to an end of the fuel cell stack to supply fluid from

outside to each of the plural fuel cells and discharge fluid from each of the plural fuel cells to outside. A case houses the fuel cell stack and the fluid supply/discharge block, and a bolt penetrates the fluid supply/discharge block and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case.

Sugita et al., Tanaka et al., and Rock, whether taken in combination, or taken alone, do not suggest the claimed fuel cell assemblies because the cited references do not disclose a fuel cell stack comprising plural fuel cells stacked in a fixed direction, a case housing the fuel cell stack, and a bolt which penetrates an end plate and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case, as required by claim 15; and a fuel cell stack comprising plural fuel cells stacked in a fixed direction, a fluid supply/discharge block, a case housing the fuel cell stack and the fluid supply/discharge block, and a bolt which penetrates the fluid supply/discharge block and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case, as required by claim 18.

The bolt penetrating the end plate and the case or the fluid supply/discharge block in a direction perpendicular to the fixed direction, according the present invention, provides improved support of the structure of the fuel cell stack against a horizontal load acting between the fuel cell stack and the case not provided by fuel cell assembly of Sugita et al., Tanaka et al., and Rock.

For the Examiner's convenience, the present invention will be contrasted with Sugita et al. by referring to an embodiment depicted in Fig. 1 of the present invention and Fig. 2 of Sugita et al. Claim 15 requires that the bolt (8) penetrates an end plate (5) and the case (3, 11) in a

direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case. Claim 18 requires that the bolt (7) penetrates the fluid supply/discharge block (6) and the case (3, 11) in a direction perpendicular to the fixed direction such that both ends of the bolt are located exterior to the case to support the fuel cell stack to the case.

In Sugita et al., the bolt (166a, b) penetrates the bracket (162a, b), but does not penetrate the fluid supply/discharge block (28) nor the end plate (24). Further, Sugita et al. do not disclose a case housing the fuel cell stack, and hence does not disclose a bolt which penetrates the housing.

Tanaka et al. do not cure the deficiencies of Sugita et al. In Tanaka et al., the bolt (104) penetrates the bottom of the case (10) and reaches the interior of the end plate (62). However, the bolt (104) does not penetrate the end plate (62). Thus, both ends of the bolt are not located on the exterior of the end plate (62).

Rock does not cure the deficiencies of Sugita et al. In Rock, both ends of the Examiner-asserted bolts (80) are not located on the exterior of the case and the bolts (80) do not support the fuel cell stack (20) to the case.

The Examiner concluded that it would have been obvious to one of skill in the art to make two bolts on either side of the end plate, such as seen in Figure 2 of Rock, into a single bolt extending through the end plate. Thus, both ends of the bolt would be located on the exterior of the case, since such a modification would involve fewer parts and allow for better securing of the case to the fuel cell stack. Applicant traverses.

Apparently, the Examiner regards Rock's wall (36) as being equivalent to the case (3) of the present invention. Rock's walls (36) are constituted by a pair of plates fitted onto the side

faces of the fuel cell stack (20) and the end plates (45). Rock's walls (36) are not a self-supporting structure, unlike the case (3) of the present invention. The walls (36) simply cover the fuel cell stack (20) but does not support the fuel cell stack (20), as required by claims 15 and 18. Rock's wall (37), is therefore, not comparable with the case (3) of the present invention.

Further, the hole (78) of the wall (36) for passing the bolt (80) is formed in a shape of a elongated slot, as can be seen in Fig. 1 and Fig. 3. The elongated slots (78) function to allow a large tolerance in relative positions of the end plates (45) and the walls (36) and do not function to allow a bolt passing through them to support the fuel cell stack (20) to the case. Hence the wall (36) does not prevent the end plate (45) from displacement in the stacking direction of the fuel cells. As shown in Fig. 3, the end plate (45) is not fixed to the wall (36) with respect to displacement in the stacking direction of the fuel cells. The combination of the wall (36) and the bolt (80) penetrating the wall (36) does not support the fuel cell stack in the stacking direction of the fuel cells. Therefore, even if the two bolts (80) of Rock are replaced by the bolt (7, 8) of the present invention, the supporting structure of the fuel cell stack in the stacking direction of the fuel cells is not enhanced.

Considering that the bolt (7, 8) of the present invention has a function to support the end plate or the fluid supply/discharge block in the case, the bolt (7, 8) of the present invention is not suggested by the bolts (80) of Rock, which merely attach the walls (36) to the end plates (45). Because the functions of the bolt (7, 8) of the present invention and the bolt (80) of Rock are entirely different, the bolt (7, 8) of the present invention does not correspond to forming in one piece an article which was formerly formed in two pieces, as asserted by the Examiner. Contrary to the Examiner's assertions, it is readily apparent that the Examiner's basis for asserting that it would have been obvious to form in one piece an article which was formerly formed in two

pieces, is **not** rooted in the MPEP § 2144.04(V)(B), but rather is rooted in impermissible hindsight reasoning in view of Applicant's disclosure. As explained above, the purpose of Rock's bolts (80) is merely to attach the end plates (45) to the walls (36) to form an outer covering of the fuel cell stack, not to support the fuel cell stack. In view of Figs. 2 and 3 of Rock, one of ordinary skill in this art would not have been motivated to replace two relatively small bolts, with a relatively much larger bolt which passes entirely through the end plate. One of ordinary skill in this art, would immediately recognize that such a large bolt would add to the cost and complexity of the fuel cell stack of Rock with no discernible benefit. The much longer bolt required to pass through the entire end plate would clearly cost much more than the relatively smaller bolts; and washers and nuts would be required, too. Instead of replacing two parts with one, as alleged by the Examiner, in the Examiner's configuration five parts are replacing two parts, as washers and nuts would be required on both ends to secure the bolt. There would be increased complexity in registering the single, long bolt with the end plates and walls, and increased complexity in securing both ends with washers and nuts. Further, as the sole purpose of the bolts (80) in Rock are to attach the end plate (45) and walls (36), and not to support the fuel cell stack, the long bolts proposed by the Examiner, would clearly be overkill, and inappropriate for the intended function of Rock's bolts.

It is readily apparent that the Examiner's asserted rationale for combining Sugita et al., Tanaka et al., and Rock is based on impermissible hindsight reasoning in view of Applicant's disclosure. In addition to the hindsight reasoning employed in combining Rock with Sugita et al. and Tanaka et al., hindsight reasoning was also used in combining Tanaka et al. with Sugita et al. The Examiner noted that Tanaka et al. teach that mounts (123, 130) give the housing structure that allows it to withstand the load concentration on the mount. The Examiner then takes an

unsupported leap of logic to conclude that it would be desirable for the bolts of Sugita et al. to penetrate the supply block instead of a bracket since it would provide more support for the fuel cell system by changing the load concentration, as Tanaka et al. teach the importance of load concentration (pages 4-5 of Final Office Action). The Examiner's position is totally unsupported by the references. Tanaka et al. discuss positioning a reinforcement member (300) about a mount (82) to reduce the load concentration on the mount (82). There is no suggestion at all in Tanaka et al. of bolts penetrating the supply block.

Therefore, neither Sugita et al., Tanaka et al., nor Rock disclose a bolt which penetrates an end plate and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located on the exterior of the case to support the fuel cell stack to the case, as required by claim 15. With respect to the Claim 18, neither Sugita et al., Tanaka et al., nor Rock disclose a bolt which penetrates the fluid supply/discharge block and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located on the exterior of the case to support the fuel cell stack to the case.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 22006); *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Sugita et al., Tanaka et al., or Rock to modify the fuel cell assembly of Sugita et al. so that it includes a bolt which penetrates an end plate and a case in a direction perpendicular to the fixed direction such that both ends of the bolt

are located on the exterior of the case to support the fuel cell stack to the case, as required by claim 15; or a bolt which penetrates a fluid supply/discharge block and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located on the exterior of the case to support the fuel cell stack to the case, as required by claim 18, nor does common sense dictate such modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making such modifications of Sugita et al., rather there appear to many shortcomings to the asserted modifications, as explained above. *See KSR Int'l Co. v. Teleflex, Inc.*, 500 U.S. ____ (No. 04-1350, April 30, 2007) at 20.

The **only** teaching of the claimed fuel cell assemblies is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sugita et al. in view of Tanaka et al. and Rock, and further in view of Groppel (US 3,856,573). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The combination of Groppel with Sugita et al., Tanaka et al., and Rock does not suggest the claimed fuel cell assemblies because Groppel does not cure the deficiencies of Sugita et al., Tanaka et al., and Rock. Groppel does not suggest a bolt which penetrates the fluid supply/discharge block and the case in a direction perpendicular to the fixed direction such that both ends of the bolt are located on the exterior of the case to support the fuel cell stack to the case, as required by claim 18.

The dependent claims are allowable for at least the same reasons as the independent claims from which they depend and further distinguish the claimed fuel cell assemblies.

In view of the above remarks, Applicant submits that this application should be allowed and the case passed to issue. If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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